ORIGINAL ARTICLE

Civilian Gunshot injuries to the Oro-facial region in Calabar, South-South Nigeria, 2002-2006

***Bassey G O** *BDS. FWACS* ***Anyanechi C E** *BDS. FWACS* ****Chukwuneke F N** *BDS. FWACS*

** Dept. of Oral and Maxillofacial Surgery, University of Calabar Teaching Hospital Calabar*
***Dept. Oral & Maxillofacial Surgery, University of Nigeria Teaching Hospital Enugu*

Abstract

Background: *This article reviews 16 cases of civilian gunshot injuries of the oro-facial region seen at University of Calabar Teaching Hospital, Calabar over a 5-year period and highlights the rising trend in the occurrence of gun shot injuries to the orofacial region as experienced in the south-south region of Nigeria*

Methodology: *Records of 16 patients with different types of gunshot injuries to the oro-facial region seen and treated at the University of Calabar Teaching Hospital, Calabar between 2002 and 2006 were reviewed. The focus was on the patient's age, gender, type of weapons used, the surrounding circumstances (accidental or intentional), the time of occurrence and management.*

Results: *Out of 16 patients seen, 14 (87.5%) were males and 2 (12.5%) were females, giving a male to female ratio of 7:1, with the age range from 18 to 50 years. Thirteen (81.3%) of the patients were injured by low velocity missile while 3 (18.7%) by high velocity missile. Violence was responsible for 14 cases (81.7%), and 2 cases (18.3%) was due to the accidental discharge.*

Conclusion: *This study has shown an increasing occurrence of gunshot injuries to the oro-facial region in our environment with males more affected than females. With the changing political situation, social advancement and urbanization, there is a need to regulate the influx of deadly weapons in the country by the relevant agencies. Maxillofacial surgeons should also brace up to the new development as this poses a new kind of challenge to our knowledge of trauma management.*

Key Words: *Gunshot injuries, Oro-facial region, Calabar, South-south Nigeria*

Date accepted for publication 12th June 2008
Nig J Med 2008; 257 - 260

Introduction

Gunshot injuries tend to be on the increase globally. In the United States more than 250 million firearms, 67 million handguns and 1 million semiautomatic weapons are presumed to be in private possession and one person is injured by a gunshot every minute and killed every ten minutes.[1, 2, 3] Nigeria is not an exception because gunshot injuries among Nigerian civilian population are on the increase, almost approaching an epidemic level[3]. This may be attributed to political instability, civil wars, economic disorder, civil unrest and lack of enforcement of the legislation on the control of the use of firearms. In Nigeria, the last major conflict experienced was the Nigerian Civil war which took place between 1967 and 1970. This experience resulted to the large influx of firearms in the country. Consequently violence has been on the increase. In the developed countries, attempted suicide is the most common cause of gunshot injuries.[4] Armed robbery, however, is the most common in Nigeria.[3] The present economic hardship being experienced as a result of high unemployment, retrenchment, inflation and recession have aggravated the incidence of armed robbery particularly[3]. Notwithstanding, Calabar South-south Nigeria has been relatively peaceful apart from local conflict, political thuggery and armed robbery attacks that occasionally occur. As a result civilian gunshot wounds to the oro-facial bones have not received adequate attention in this part of the country. Literature reviewed has not shown any published work on gunshot wounds of the oro-facial region in South-south Nigeria. The purpose of this article is to review the 16 cases of gun shot injuries of the oro-facial region seen at University of Calabar Teaching Hospital, Calabar Nigeria over a 5-year period and also to highlight the rising trend in the occurrence of gun shot injuries to the oro-facial region as experienced in the south-south region of Nigeria

Patients and Methods

We carried out a retrospective review of 16 patients with civilian gunshot injuries to the oro-facial region seen and treated at the University of Calabar Teaching Hospital, Calabar between 2002 and 2006. These patients were referred to the units by the dental surgeons, medical practitioners and health centers in the catchments area of the Teaching hospital. The catchment's areas are the

Correspondence to Dr F N Chukwuneke, Email: ichiefn2002@yahoo.com

south-south states, Abia state and Ebonyi state of the Federal Republic of Nigeria. The focus was on the patient's age, gender, type of weapons used, the surrounding circumstances (accidental or intentional) and the time of occurrence. Also analyzed, were the structures injured, points of bullet entry and exit based on clinical and radiological examination. Methods of management and results of treatment of these patients and complications encountered were equally documented.

Results

Out of 16 patients seen, 14 (87.5%) were males and 2 (12.5%) were females, giving a male to female ratio of 7:1, with the age range of 18 to 50 years. Thirteen (81.3%) of the patients were injured by low velocity missile while 3 (18.7%) by high velocity missile. Violence was responsible for 14 cases (81.7%), and 2 cases (18.3%) were due to accidental discharge (Table I) Fifteen (93.5%) out of the 16 patients were treated while 1 (6.5%) left against medical advice. Two (12.5%) patients age 18-20 years sustained accidental injuries. Most of the patients were between the ages of 21-40 years (10; 62.5%) while 4 (25%) were between 40 and 50 years of age (table 2). The year 2006 recorded the highest number of patients (Table II.). All the patients had various degrees of hard and soft tissue injuries. One (6.5%) had the anterior one-third of the tongue severed while 3 (18.8%) had the parotid ducts traumatized. Twelve (75%) out of 16 patients had left-sided bullet entry points, one from the upper lip and pre-maxillary region and 3 (18.8%) from the right side. Only 1 (6.5%) had bilateral comminuted fractures of the mandible with prolonged paraesthesia (Fig. 1). All the 15 patients treated were initially managed by resuscitation, followed by early wound exploration, debridement and delayed primary closure irrespective of the type of gun used. Out of the fifteen patients treated, 11 (73.3%) had large scars at the points of bullet exits. All the 11 patients sustained injuries from shotguns. Delayed wound healing characterized those with parotid duct fistula and required more than one surgical procedure to re-cannulate the duct. Fibrous ankylosis following the lodgment of pellets deep in the massetter muscle occurred in one patient

Table I Weapons used, age, circumstance, structures injured.

Year	Type of weapon	Age	Sex	Circumstances	Injured Structure
2002	Shotgun	18	M	Accidental	Tongue,Lt.Cheek,Zygoma
	Rifle	32	M	Intentional	Rt. Mandible (body)
2003	Shotgun	43	M	Intentional	Rt.Mandible parotid duct
	Shotgun	25	M	Intentional	Rt. Mandible (body)
	Shotgun	34	M	Intentional	Lt.Maxilla/parotid duct2
2004	Shotgun	28	F	Intentional	Lt.Mandible (body and angle)
	Shotgun	28	M	Intentional	Lt.Mandible (body)
	Shotgun	35	M	Intentional	Rt. Maxilla
2005	Shotgun	44	M	Intentional	Rt. Maxilla
	Shotgun	32	M	Intentional	Rt.Mandible(body)
2006	Shotgun	28	M	Intentional	Rt. &Lt.Mandible (body)
	Rifle	28	M	Intentional	Rt.Mandible (comminuted)
	Shotgun	45	M	Intentional	Rt.Mandible/parotid
	Shotgun	20	M	Accidental	Rt.Maxilla /Zygoma
	Shotgun	46	M	Intentional	Lt. Massetter muscle/Zygoma
	Rifle	25	F	Intentional	Lt. Mandible(body)

No. of Shotguns=13; Rifles=3, No. of Males=14; Females=2, Violence=14; Accidental=2

Table II.Number of patients with gunshot injuries to the orofacial region in Calabar, south-south Nigeria, 2002-2006

		Age group [yrs]					
Year	Sex	1-10	11-20	21-30	31-40	41-50	Total
2002	M	0	1	0	1	0	2
	F	0	0	0	0	0	0
2003	M	0	0	1	1	1	3
	F	0	0	0	0	0	0
2004	M	0	0	1	1	0	2
	F	0	0	1	0	0	1
2005	M	0	0	0	1	1	2
	F	0	0	0	0	0	0
2006	M	0	0	2	0	2	4
	F	0	0	1	0	0	1
Total		0	2	6	4	4	16

Discussion

Civilian gunshot injuries are on the increase in Nigeria.[3, 6] Several studies[5, 6, 7] on gunshot injuries were mostly focused on injuries to the extremities and in the abdominal region. However, Oji[3] reported an increasing occurrence of gunshot injuries of the head and neck region in the eastern part of Nigeria. We observed that

in all the reported cases of gunshot injuries, men were more affected than women. Oji reported a 5:1 male-to-female ratio while Catchy [6] and Ofiaeli [8] reported male-to-female ratio of 8.5: 1 and 6:1 respectively. This is in line with our findings. We observed a male-to-female ratio of 7:1. This obvious sex differences could be explained by the fact that men are mostly in combat and are generally more exposed to violence. In the past these types of injuries were rarely encountered but in recent time, there seems to be a rising wave of firearms related crimes in Nigeria. With democratization and increasing urbanization of some areas, this trend may continue because of the increasing level of desperation to either get rich quickly or attain political powers or both at all cost. Abiose[9] observed a similar trend in presentation in a study carried out in Ibadan western Nigeria in which, 49% of the 104 subjects injured were due to armed robbery attacks. These factors may also account for the observed increase from 2002 to 2006 in our study. Majority of patients were aged between 21 and 40 years. This age bracket consists of active middle age people who struggle to acquire comfort either through political or business ways. The severity of gunshot wounds varies according to the caliber of the weapon used and the distance from which the patient was shot [10]. The type of missile involved is important in the determination of the magnitude of injury and its management. Thirteen (81.3%) out of the sixteen had injuries from shotguns. These are the type of guns which can inflict massive tissue destruction when discharged at close range. Rifles are of two types; the low and high velocity types. The former usually inflicts small entry wounds, often with little or no exit, and cause comminution when bone is encountered while the later will cause extensive damage, often requiring reconstruction later. Shotguns are more accessible in this area as many blacksmiths are engaged in local fabrication of these guns. Rifles are not commonly found in this environment. The body of the mandible was more affected than any other parts of the face and neck. Ten (62.5%) out of the 16 patients had their mandible fractured. This bone seems to be the preferred target in gunshot attacks[11]. Four (25%) had injuries on the maxilla with only one out of these sustaining concomitant injuries to the parotid duct. This is unusual considering the anatomical relation between the maxilla and the parotid duct. The other two patients with severed parotid duct were in association with mandibular fractures suggesting a submandibular bullet entry and an upper buccal exit. In all these patients, healing was delayed because the wounds were constantly wet with saliva. In addition to surgical recannulation of these ducts, twice daily administration of 0.3mg of Atropine sulphate tablets was given routinely to reduce secretions and enable healing take place. Repair of soft tissue defect was carried out by undermining surrounding tissues and mobilizing local flaps. The patient with lacerated tongue presented four days later with gangrenous anterior one-third of the tongue. The gangrenous part was severed and the wound surface of the stump revitalized and repaired. The entire tongue could possibly have been salvaged if the patient presented earlier than he did. The other patient that presented late was seen two weeks after the incident with bullet pellets in the left Massetter muscles and resultant limitation of mouth opening. This was treated by vigorous physiotherapy and a 3cm mouth opening was achieved. All the other 13 patients who presented within twenty-four hours were treated following the principles of management of acute gunshot wounds through debridement, primary suturing with provision of dependent drainage, immobilization of fractured mandible, antibiotic and anti-tetanus therapy followed by post operative physiotherapy. Since no patient required facial reconstruction, the one-stage management procedure was efficacious as the wounds healed satisfactorily without disability. This approach to treatment has been advocated by several authors in the past[3,10,11,12].

Conclusion

There is an obvious rise in the occurrence of gunshot injuries to the maxillofacial region between 2002 and 2006 in Calabar, south-south Nigeria. This implies that an erstwhile peaceful community is fast becoming an area of questionable security risk. The change in political situation, social advancement and urbanization notwithstanding, this trend needs to be checked by the relevant agencies. Medical and Dental practitioners, especially the Maxillofacial surgeons should also brace up to the new development as this poses a new kind of challenge to our knowledge of trauma management.

References

1. Hans raj KK, Weaver LD, Todd AO., et al. Efficacy of Ceftriaxone versus Cefalozin in the prophylactic management of extra-articular cortical violation of bone due to low-velocity gunshot wounds. Orthop. Clin. NA 1995; 26:9-17

2. Ordog GJ. Balasubramaniam S, Wasserberger J. Outpatient management of 357 gunshot wounds to the chest. J. Trauma 1983; 28:832-835

3. Oji C. Gunshot wounds of the head and neck: our experience. J Coll Med 1999; 4: 93-96.
4. Norton R, Langley J. Firearm related deaths in New Zealand, 1978-87. N Z Med. J. 1993; 106: 463-465
5. Farjo LA, Miclau T. Ballistics and mechanisms of tissue wounding. Injury 1997; 28: 12-17
6. Katchy AU, Chukwu COC, Nwankwo OE, Onabuwole BO. Gunshot Wound to the Extremities A review of fifty-seven cases. Orient J. Med. 1990; 2: 216-218
7. Omer GD. Injuries to the Nerves of the Upper Extremity. J. Bone Joint Surg. 1974; 56: 1615-1624
8. Ofiaeli RO. Gunshot wounds in a semi-urban Nigerian Population: A review of 50 cases. Trop. J Med. Res. 1997; 1: 49-53
9. Abiose BO. Maxillofacial skeletal injuries in the Western states of Nigeria. Br. J Oral Maxillofac Surg 1986; 24:31-49.
10. Hollier L, Elena P, Grancharova, Maan KA. Facial gunshot wounds: A 4-year experience. J Oral Maxillofac Surg 2001; 59: 277-282.
11. Khalil AF. Civilian gunshot injuries to the face and jaws. Br J Oral Surg 1980; 18: 205-211.
12. Banks P. Treatment of maxillofacial injuries in various theatres of war. In: Rowe and Williams' Maxillofacial Injuries: 1994 edition Edinburgh, London: Churchhill Livingstone, pg 749-755.